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ABSTRACT

This collection of 16 tested ideas for improving teaching and learning evolved from the work of the 1995 Proven Laboratory Practices Task Force charged with identifying and collecting the best and most useful work from the Regional Educational Laboratories. The Regional Educational Laboratory program is the largest research and development investment of the U.S. Department of Education designed to help in school improvement. Each laboratory applied its own criteria for selection so that quality standards are the measure of all the practices. The practices described are grouped into categories of early childhood education, instructional content and practice, teacher professional development, and school improvement strategies. The following programs are described: (1) Family Connections; (2) Program for Infant and Toddler Caregivers; (3) Classroom Assessment Video Training Workshops; (4) Comprehensive School Mathematics Program; (5) Literacy Plus; (6) SEDL Follow Through Program; (7) Strategic Teaching and Reading Project (STRP); (8) Success for All and Exito para Todos; (9) Vocational Mentoring; (10) Dimensions of Learning; (11) Improving Multigrade Classroom Instruction in Small, Rural Schools; (12) Peer-Assisted Leadership; (13) Questioning and Understanding To Improve Learning and Thinking (QUILT); (14) Teaching Cases: New Approaches to Teacher Education and Staff Development; (15) Onward to Excellence; and (16) Successful Schools Process. Each program description discusses the ideas behind the program, how it can help teaching and learning, how it was tested, how it is being used, and ways to use it in the community. References and contacts are listed for each program. (SLD)

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Tried and True

Tested Ideas for Teaching and Learning from the Regional Educational Laboratories

Prepared by
Luna Levinson
Robert Stonehill

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Acknowledgments

This collection of 16 tested ideas for improving teaching and learning evolved from the work of the 1995 Proven Laboratory Practices Task Force charged with identifying and collecting the very best and most useful Laboratory work. Each Laboratory applied its own stringent criteria for selection so that quality standards are the watermark of all the proven practices. This assurance means that each proven practice achieves specified results consistent with the educational research, and that each proven practice is validated by documented use and evaluation with one or more client groups. Nearly 150,000 educators and almost 3 million students and other clients have benefited from programs described in this collection.

The Proven Laboratory Practices effort brought together Laboratory colleagues and friends in schools across the country. The Task Force was ably led by Rex Hagans (Northwest Regional Educational Laboratory). Task Force members included Sandra Berger (Mid-continent Regional Educational Laboratory); Deborah Childs-Bowen (Southeastern Regional Vision for Education); Stanley Chow (WestEd); Joe D'Amico (North Central Regional Educational Laboratory); Marcella Dianda (Southwest Educational Development Laboratory); Janice Dilliplane-Kruse (Research for Better Schools); John Kofel (Pacific Resources for Education and Learning); Pat Kusimo and Sandra Orletsky (Appalachia Educational Laboratory); and Cheryl Williams (Regional Laboratory for Educational Improvement of the Northeast and Islands).

Since the Task Force work was completed, the U.S. Department of Education has awarded a new set of 5-year contracts to carry out the work of the Regional Educational Laboratories. In this multi-year effort, the Laboratories are concentrating their efforts on supporting broad-based comprehensive educational change. In support of the goal of crafting comprehensive strategies, the Laboratories have continued to expand the depth and scale of the collection of proven practices initially developed during the 1990–1995 contract period.

Carol Chelemer, the OERI Laboratory Program Team Leader, made valuable suggestions about the book and kept our attention on the central issues of evaluation. Margery Martin improved the book enormously with repeated readings and editing that ensured accurate details. Individuals in the Laboratories who worked on the publication include Robert Childers, Pamela Lutz, Sandra Orletsky, Patricia Penn,

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About This Book

This book presents 16 tested ideas for improving teaching and learning which were developed by—and are available from—the Regional Educational Laboratories. The Regional Educational Laboratory Program (the "Lab Program") is the U.S. Department of Education's largest research and development investment designed to help educators, policy makers, and communities improve schools and help all students attain their full potential. Administered by the Office of Educational Research and Improvement (OERI), the network of 10 Regional Labs works to ensure that those involved in educational improvement at the local, state, and regional levels have access to the best available research and knowledge from practice.

The ideas in this book are all products of Laboratory investments in long-term research and development, an arduous process which starts with a theoretical model about how learning takes place, tests and refines the model in actual settings, and creates and continuously improves strategies to translate this new knowledge into effective teaching and learning practices. The programs highlighted in this book represent a continuum of the research and development process; they range from specific content- or audience-focused efforts up through programs that can broadly support comprehensive reform efforts.

Although the Laboratories have developed many programs over their 30-year history, this collection represents a group of programs carefully selected by a 1995 Laboratory Task Force (composed of educators and evaluators working for the Laboratories under contract with the U.S. Department of Education) to ensure that each program is endorsed and actively supported by all 10 Laboratories (not just by the originator). Each "tried and true" program, at a minimum, has an extensive research base, has been kept up-to-date, has clear evaluation data which support program effectiveness, and can be adapted to a variety of school and community settings.

Each program in this guide is profiled through a series of questions:

What is the idea behind the proven practice?

What does the research say about how this idea can help teaching and learning?

How was this program tested?

What communities and states are using this program?

What's involved in using this program in my school and community?

These questions are designed to help teachers and administrators assess which of these programs are consistent with their own educational philosophies and curricula, and to suggest ways that such programs—and their underlying research and implementation strategies—can help all children attain high academic standards and can be a useful tool to support comprehensive school reform efforts.

About Solving Critical Problems in American Schools

When Congress created the Regional Educational Laboratories in 1965, the government established a national reserve of educational experts to take risks in developing novel research and crafting solutions to solve critical problems in American schools. Not unlike the wisdom guiding a national investment in medical and scientific research, the Laboratories are designed to identify and collect promising educational research, make direct application of the research in tests and in schools, and develop sound educational solutions to share impartially with schools. The hallmark of the Laboratories is their link to schools and teachers whose practices inform the Laboratories' research and development process from beginning to implementation

and on through revisions that ensure optimum effectiveness and utility over time. Such links are characterized by long-term commitment and trust among Laboratory staff, local teachers, administrators, and state policy makers.

How do Laboratories go about problem solving? The inquiry process draws on an existing base of research and generates knowledge of broader utility and practical application in a school or educational policy setting. A simplified step-by-step process begins with Laboratory experts and school and state educational leaders defining and analyzing the educational problem. This initial collaborative step with practitioners marks from the outset the unique Laboratory approach to school research and improvement. Next, Laboratory staff apply the knowledge base of research, develop concepts, and design solutions along with analyzing feasibility. Pilot development and testing in schools is followed by design implementation and further development and testing. At this stage, marketing and dissemination support strategies are developed. Finally, the Laboratory initiates technical assistance support to the field of teachers and other educators who are implementing the research and development work.

The underpinnings of this systematic process are the unique Laboratory capabilities of cultivating and sustaining relationships through assistance provided to schools. The Laboratories are ready to build working partnerships with schools and districts which are considering implementing or developing further any of the programs or strategies described in this document, or which are planning or conducting their own research and development using similar themes.

About Benefiting From Your Regional Laboratory

In addition to working with the Laboratories to use any of the 16 programs described in this book, you can benefit from an array of technical assistance and research services provided by the 10 Laboratories. For instance, Laboratories convene and connect practitioners from their regions in discussion groups, workshops, and networks to share and solve mutual problems, bringing to the table research-based knowledge to inform discussions and decision making. Laboratories synthesize research about significant problems and policy issues, provide policy makers with unbiased information and analyses of options, and provide educators with access to print and electronic data libraries, curricular materials, and other relevant products.

To ask about any of the programs described in this book, or to learn more about available Laboratory services or about becoming involved in Laboratory activities, contact the Regional Educational Laboratory that serves your state. A list of the Laboratories and their service regions is included in the back of this document. And at the book's closing, you will find a postscript about the Department's new long-term Research Priorities Plan which will chart continued research and development work aimed at solving the most pressing problems in our schools.

Family Connections

A Set of Guides for Parent Involvement in the Education of Young Children

Developed and tested by the Appalachia Educational Laboratory (AEL)

What is the idea behind *Family Connections?*

Family Connections is designed to help schools involve families in the education of their young children. The materials are packaged as a set of 30 colorful, four-page guides that appeal to a broad range of parents. Developed for parents with children in preschool or kindergarten programs, the guides make it easy for parents and children to spend time together at home in ways that are appropriate to children's ages and stages of development.

The front page of each guide is a message to parents that emphasizes such topics as the importance of reading aloud, how children learn through play, and how effective discipline teaches self-control. Suggested learning activities are simple, fun to do, and use materials commonly found in the home. Each guide also includes at least one read-aloud selection, and all contain original illustrations. A front-page Sunshine Gram, found in several issues, provides space for teachers to send parents frequent positive messages. The handbook that accompanies the guides includes suggestions for stimulating and sustaining parent interest in using *Family Connections.*

AEL developed the materials to respond to needs expressed by early childhood specialists who wanted to help all children start school ready to learn. They result from an earlier research and development effort undertaken by AEL that focused on materials and activities to involve parents as both teachers and learners. The program was based on the premise that parents want to be involved in their children's education, but many do not know *how* to be helpful. While *teachers* may know how, their workloads often preclude their providing as much assistance as parents want. *Family Connections* was designed to be useful to both parents and teachers.

The *Family Connections* program addresses three objectives: to improve communication between school and home, to enable families to spend time with their young children in ways that enhance their early learning, and to increase parental understanding of early childhood education. Although *Family Connections* was intended for at-risk families, field test findings revealed that

the guides are suitable for families without regard to social or economic status.

Family Connections 1, for preschool children (and now in its fourth printing after initially being available for school year 1992–93), was so successful that second and third sets were developed: *Family Connections 2* for kindergarten children is in its second printing; and a Spanish-language version of *Family Connections 1*, titled *Relaciones Familiares 1*, was published in 1996.

What does research say about how this idea can help teaching and learning?

Research of more than a quarter-century validates the importance of family involvement in education. Contemporary studies have found consistent evidence that when parents encourage children, show interest in children's learning at home, and participate at school, they affect their children's achievement, even after student ability and family socioeconomic status are taken into account.

The development of *Family Connections* was informed by AEL's work of nearly three decades ago with HOPE—Home-Oriented Preschool Education. A novel preschool program, HOPE was designed to prepare 3- through 5-year-olds for school by involving both the children *and their parents* in daily television lessons, home visitation, and a weekly group experience. An extensive, five-stage follow-up study conducted from 1976–1986, after children in the original experiment graduated from high school, showed enduring positive effects. These persistent gains are attributed to the enhanced parenting skills learned through the HOPE experience. More than 50 technical and evaluation reports document the program's development and long-term benefits. HOPE's rich research base was used throughout the development of *Family Connections*.

How was this program tested?

Prototype issues of the guides were reviewed by a panel drawn by AEL that included potential users from the four-state region—preschool coordinators including Head Start Coordinators and Title I Directors, teachers, and PTA leaders. They rated very high such variables as developmental appropriateness, interest, understandability, and usefulness to parents. The prototypes became *Family Connections 1*, which was pilot tested with 13 teachers in 10 Kentucky schools. Staff collected pretest and posttest data on the amount and kind of school-to-

home communication. Teachers sent the guides home with children weekly, and collected reaction forms from parents every month. Parent reaction was almost unanimously positive, as was that of teachers. Both groups' reactions were incorporated into the revision process.

Three months after the pilot test, a random sample of parents was surveyed by telephone. They reported that children were excited when they brought *Family Connections* home and were eager to use them; parents found the front-page messages useful; the guides provided families with opportunities to spend time together and learn; and activities, read-alouds, and illustrations engaged the children. Parents said they found the guides helpful, informative, and easy to use, and perceived that using *Family Connections* enhanced their children's learning.

Impressed with the results, the Kentucky Department of Education made 20,000 sets available at no cost to all the state's programs for at-risk 4-year-olds. Results of a second random survey—this time of preschool teachers in Kentucky who had used *Family Connections* for a year—were equally positive. Without exception, teachers reported the activities to be developmentally appropriate for their students. Almost 100 percent said parents liked using the guides, and nearly as many believed that parents' use of *Family Connections* made a difference in children's learning. Virtually all teachers said they would recommend the guides to other teachers.

An advisory group of teachers, principals, and state department of education staff was involved in the development of *Family Connections 2*. Early childhood specialists from all four states in AEL's region coordinated an effort of 34 teachers and more than 714 students in 10 schools to pilot test the guides. Findings were nearly identical to those in the *Family Connections 1* test. Kindergarten teachers in Putnam County, West Virginia, subsequently field tested the guides (during school year 1994–95) and elected to use them countywide the following year. Evaluators of both the pilot test and field tests reached almost identical conclusions to those of *Family Connections 1*.

A geographically diverse panel of practitioners reviewed selected issues of the Spanish-language edition of the guides and found them culturally appropriate as well as easy to read and use. AEL worked with the Early Childhood Division of WestEd Laboratory, the Regional Laboratory in San Francisco, to produce *Relaciones Familiares 1*, which became available in 1996.

What communities and states are using this program?

Many programs in AEL's four states—Kentucky, Tennessee, Virginia, and West Virginia—use the guides: in Head Start, Even Start, Title I, kindergarten, and teacher-training programs. Programs in 47 other states, including both Alaska and Hawaii, have ordered *Family Connections.* New Jersey's Rural Advisory Council supported workshops for teacher–principal–parent teams to introduce the guides. A number of districts have since put *Family Connections* at the center of parent involvement programs that have attracted foundation grants. A West Virginia elementary school principal whose district had no preschool program enrolled families to receive *Family Connections 1* by mail for the year preceding their children's kindergarten enrollment. He also purchased *Family Connections 2* for his kindergarten classrooms. A number of Head Start programs have used the guides since they first became available. Some use them as a curriculum for home-based programs.

What's involved in using this program in my school and community?

Family Connections requires no training or technical assistance from the developer. Prospective users purchase the guides which are packaged to provide each of 25 children and their families a set of 30 issues. A user handbook included with each package offers numerous suggestions for distribution and use and simplifies implementation for school and program staff.

In school programs, most teachers distribute the guides on a weekly basis. The guides are written at a fifth-grade or lower reading level so they are readily understandable by virtually everyone; parents need no outside help. Issues are numbered for user convenience, but need not be used in any particular order after the first one. They are not seasonal, so use can start at any time of the year. Some programs mail the guides to families.

Costs associated with implementing this program vary, depending on the components of the program being used.

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Program for Infant and Toddler Caregivers

A Complete Multimedia Training System for Caregivers of Young Children

WestEd Developed and tested by WestEd and the California Department of Education

What is the idea behind the *Program for Infant and Toddler Caregivers?*

Given today's economic environment, many families with infants must depend on outside child care. Research shows that when that care is of high quality infants and toddlers can thrive, benefiting significantly in both cognitive and social development. Yet good child care is shockingly hard to find. In fact, a recent national study indicated that 91 percent of available child care programs provide inadequate care and that 40 percent actually hinder infants' normal development because care is of such low quality.

Keenly aware of the importance of early experience on children's later functioning, the Far West Laboratory, now WestEd, in collaboration with the California Department of Education, assembled a team of experts in child development, child care, adult education, and print and video production to work with national and state advisors to create a comprehensive training system for caregiver trainers, center-based caregivers, and family child care providers. The materials are based on the best knowledge from child development theory, research, and practice, and focus on meeting infants' social, emotional, cognitive, and physical needs while in child care settings.

This training system helps caregivers and program managers

- give infants uninterrupted time to explore;
- interact with infants in ways that emotionally and intellectually support their discovery, learning, and self-esteem;
- develop sound program practices and policies; and
- design safe, interesting, and developmentally appropriate environments.

The program is divided into four modules:

Module I:	Social–Emotional Growth and Socialization
Module II:	Group Care
Module III:	Learning and Development
Module IV:	Culture, Family, and Providers

The program's centerpiece is a series of 12 broadcast-quality training videos (produced in English, Spanish, and Chinese–Cantonese). Augmenting the videos are

various print materials, including a series of guides on infant and toddler caregiving and trainer's manuals in an easy-to-follow format for presenting the program materials to caregivers.

WestEd's Center for Child and Family Studies and the California Department of Education's Child Development Division currently conduct Module Training Institutes lasting 4 days for each module. The institutes are offered to educators, program managers, and other professionals responsible for training infant and toddler caregivers. These intensive sessions help trainers deepen their own understanding of each module's content and acquire skills in the integrated presentation of the program's concepts.

What does research say about how this idea can help teaching and learning?

Education and specialized training of caregivers have been identified as critically important contributors to high-quality care. Research has demonstrated that babies in poor quality settings may become ill more often due to the absence of basic sanitation for diapering and feeding; play in unsafe situations; lack warm, responsive relationships with caregivers; and miss out on learning because they do not have materials that support physical and intellectual development.

In an independent evaluation of the *Program for Infant and Toddler Caregivers*, 89 percent of family child care providers who received the training were found to provide developmentally appropriate care. Program-trained caregivers were also observed to be highly responsive with infants and toddlers. In contrast, a national study using the same measures of quality indicated that only 12 percent of family child care providers offered good quality care.

How was this program tested?

From its inception 10 years ago, the program has relied heavily on formative evaluation. All videos and related materials—in rough cut and draft form, respectively—have been reviewed by the program's advisory panel of state and national early childhood experts, as well as by participants in the Module Training Institutes.

Two activities have been completed thus far in the formal evaluation of the program—an evaluation of family child

care settings and a survey of California trainers:

1. Dr. Carollee Howes of UCLA evaluated family care settings after the caregivers completed program training. Adult interactions with infants were highly supportive of the children's social, emotional, and intellectual development. Almost all of the settings were found to be of good quality.
2. A survey of trainers who had participated in the Module Training Institutes indicated:
   - The amount of infant and toddler caregiver training provided by program graduates increased by 100 percent as a result of participating in the module institutes.
   - Community colleges in California with faculty who participated in the module institutes have been able to expand their course offerings on infant care and development.
   - Over 80 percent of program graduates use the trainer manuals regularly or extensively.
   - Program graduates have effectively used the materials and training strategies with a wide range of adults who care for infants and toddlers, including family child care providers, center-based caregivers, teenage parents, and home visitors.

What communities and states are using this program?

Early childhood educators and trainers from throughout the United States and foreign countries have participated in the Module Training Institutes. The four-module series is offered annually in California. In addition, training institutes have taken place in Illinois, Minnesota, and North Dakota. National training institutes have been conducted for the Migrant Head Start program and the new Early Head Start program. Every site in the Early Head Start program has had at least one staff member participate in the module training.

Thousands of individuals and organizations throughout the United States and the world are using the program to educate caregivers.

What's involved in using this program in my school and community?

Participants in the Module Training Institutes receive a certificate of completion from WestEd and the California Department of Education, which recognizes them as trainers for the specific

module(s) in which they trained. These institutes are open to both California residents and participants from outside the state. WestEd also arranges special training institutes to meet the needs of specific groups or infant care systems. These institutes are available nationally or internationally by special arrangement. The program's video and print materials can be obtained from the California Department of Education's Publication Unit without participating in module training. An entire module or individual items can be purchased.

Costs associated with implementing this program vary, depending on the components of the program being used.

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Classroom Assessment Video Training Workshops

A Set of Video-Based Workshops To Improve the Assessment Skills and Understanding of Teachers

Developed and tested by the Northwest Regional Educational Laboratory (NWREL)

What is the idea behind *Classroom Assessment Video Training Workshops?*

This 16-video series was created to assist teachers in developing classroom assessment skills. The videos are based on the idea that quality assessment serves clearly articulated purposes, arises from and reflects clearly stated student achievement targets, relies on an appropriate assessment method for the purposes and targets being assessed, samples student achievement adequately, and avoids sources of errors.

The series weaves these threads through specific videos on good quality assessment in general; designing paper and pencil tests; assessing thinking, writing, science, mathematics, and reading; understanding standardized tests; performance assessment and portfolios; and developing sound grading practices. Each video-based workshop package includes a training video, the training guide, background reference material, overhead transparencies, and participants' handouts. Workshops last from 1 to 8 hours.

The latest in the series are on the following subjects:

- Policies and issues related to assessment quality in the era of outcomes-based education—"Facing the Challenges of a New Era of Educational Assessment," 1992;
- Three videos on writing assessment, systematically evaluating student writing along six dimensions: ideas, organization, voice, word choice, sentence fluency, and conventions (the six-trait model):
  - — Overview of direct writing assessment using the six-trait model, "Writing Assessment: Issues and Answers," 1992;
  - — In-depth training on the six traits, "Writing Assessment: Training in Analytical Scoring," 1991;
  - — Teaching students to be self-assessors of writing using the six-traits, "Writing from the Inside Out: Revising for Quality," 1995;

- Two videos on portfolios:
  - — How to design a portfolio system, "Using Portfolios in Assessment and Instruction," 1992;
  - — Classroom examples of portfolios in use, "Putting Portfolio Stories To Work," 1995; and
- Purposes of report card grades and student characteristics that should be factored—"Sound Grading Practices," 1991.

What does research say about how this idea can help teaching and learning?

The *Classroom Assessment Video Training Workshops* are based on the decade-long research efforts of Dr. Richard Stiggins (formerly of Northwest Regional Laboratory) and his colleagues.

Assessment literacy needs were identified by observing teachers' specific classroom instructional practices and documenting how they use assessment information to make instructional decisions, what their training experiences were, and how confident they were in assessing students. This research indicates that typical assessment training in teacher education programs (when required at all) did not address the day-to-day assessment needs of classroom teachers.

How was this program tested?

Video content is based on extensive use and refinement of materials over several years with hundreds of teachers. Specific information about the quality and content of each workshop was gathered from participants. Once the format and content of the workshop was finalized, the video segments were made.

In 1991, a study was conducted that addressed both the impact of the original research on the field of assessment, and the impact of the video training package on teachers. (At that time, 10 videos had been developed.) Results of interviews with members of the research community and follow-up with trainers using the materials indicated extensive use and impact on practice.

What communities and states are using this program?

The *Classroom Assessment Video Training Workshops* have been or are currently being used in 21 states including Alaska, Arizona, Colorado, Hawaii, Idaho, Michigan, Nebraska, Utah, Washington, and Wisconsin, and in the

Canadian provinces of Alberta, Ontario, and Quebec. The workshops have also been used in Guam, the Northern Mariana Islands, Palau, and Yap.

It is impossible to determine the number of teachers trained using these videos since several hundred packages are distributed each year. At the time of our follow-up study in 1991, over 4,000 facilitators had trained more than 10,000 teachers in the United States and Canada.

What's involved in using this program in my school and community?

Each video-based workshop requires the training package, which includes the training guide, coordinator reference resources, overhead transparencies, and the participants' handouts. In addition, training is necessary for those who will be presenting the workshops. NWREL staff or school staff who have been trained by NWREL can serve as the workshop coordinator(s). Training can be planned to best fit the schedule of the school.

Beyond these costs, implementation of *Classroom Assessment Video Training Workshops* requires the support and commitment of teachers and school administrators to develop and improve their level of assessment literacy. Without shared interest and support, the effects of the assessment training will be limited to isolated classrooms and will not result in a systemic change in the schools. Once the commitment to improve classroom assessment methods is made, the workshop training can be planned.

Costs associated with implementing this program vary, depending on the components of the program being used.

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Comprehensive School Mathematics Program (CSMP)

Kindergarten Through Sixth Grade Mathematics Focusing on Problem Solving and Concept Development

McREL Developed and tested by the Mid-continent Regional Education Laboratory (McREL)

What is the idea behind *CSMP*?

The primary goal of the *Comprehensive School Mathematics Program* is to provide a complete kindergarten through sixth grade mathematics program which develops a broad and balanced range of skills regardless of students' ability levels—a program that will actively involve students in the world of mathematics, not simply drill them in the techniques of arithmetic. As a result, students will be able to understand the content and applications, develop techniques for learning them, and use their mathematics to solve problems.

Among the basic principles that guided developers were the following:

- Mathematics is a unified body of knowledge and should be organized and taught as such.
- Mathematics, as a body of knowledge, requires certain ways of thinking and cannot be done by the exclusive use of memory.
- Children learn through interrelated experiences and by reacting to problem situations.
- Mathematics is best learned when the applications presented are appropriate to students' levels of understanding and to their natural interests.

One of the manifestations of these convictions in the construction of the *CSMP* curriculum is the spiral approach. The content is completely sequenced in spiral form so that a student is brought into contact with each area of content continuously throughout the program. This approach consciously precludes atomizing the content and mastering each bit before continuing to the next. Students work through repeated exposures to the content, building interlocking experiences of increasing sophistication.

The content is learned in an atmosphere of constant connections with applications, from simple story situations to challenging applications to nontrivial simulations of real world problems. The emphasis at all times is on a two-level approach to learning: understanding and

learning—understanding the content itself and its applications, and equally important, developing the techniques and processes of learning the content. It is the latter form of knowledge that gives power to apply the former.

To this end, the content is presented as an extension of experiences children have encountered in their development, both at the real-life and fantasy levels. Using a "pedagogy of situations," students are led through sequences of problem-solving experiences presented in game-like and story settings. Powerful non-verbal "languages," such as strings, arrows, and the Papy Minicomputer, allow students immediate access to the mathematical ideas and methods necessary not only for solving these problems, but also for continually expanding their understanding of the mathematical concepts themselves.

Tools and manipulatives such as the calculator, various geometry tools, random devices, various kinds of blocks, counters, and tiles are used extensively throughout the curriculum to pose problems, explore concepts, develop skills, and define new ideas.

What does research say about how this idea can help teaching and learning?

This program addresses the needs faced by mathematic teachers as discussed in reports by many national groups, including the National Council of Teachers of Mathematics, the National Science Board, and the National Assessment of Educational Progress. These reports consistently stress several things:

- Problem solving should be the focus of school mathematics.
- The study of mathematics should emphasize developing higher order thinking skills (reasoning, analyzing, estimating, inferring, and others), understanding of concepts, communicating about mathematics, making mathematical connections, and applying mathematics.
- Basic skills in mathematics should be defined to include more than computational facility.
- School mathematics should provide for an integrated study with increased emphasis on content such as geometry, measurement, patterns, relations, numeration, probability, statistics, logic, algorithmic thinking, and applications.
- Mathematics programs should take advantage of technology such as calculators and computers.

How was this program tested?

At each grade level, a 5-year research and classroom-based development, evaluation, and revision cycle was followed, on a staggered basis. As the program was developed, piloted, and revised, both content and pedagogy were modified to reflect classroom experiences.

Year 1. Instructional materials were planned and taught by *CSMP* staff to heterogeneous public and parochial school classes. This experience led to a Local Pilot Test version of the materials.

Year 2. The Local Pilot Test materials were used by about 10 regular classroom teachers in St. Louis area schools. *CSMP* staff observed the classes and revised the materials, producing an Extended Pilot Trial version.

Years 3 and 4. The Extended Pilot Trial version was used for 2 years in a national network of cooperating schools. Extensive evaluation data, including comparisons of *CSMP* and non-*CSMP* classes, were collected.

Year 5. Revisions based on Local and Extended Pilot Test data resulted in the versions of materials that were then readied for publication.

An extensive evaluation dealing with many aspects of *CSMP* usage was conducted. This work led to the publication of many formal evaluation reports (about 60 volumes). Copies of evaluation reports and summaries of evaluation data are available.

Three primary claims can be made for *CSMP*:

1. *CSMP* improves students' ability to use the mathematics they have learned in new problem-solving situations involving estimation, mental arithmetic, representations of numbers, number patterns and relationships, word problems and producing multiple answers, prediction, and algebraic thinking.
2. *CSMP* students show a higher level of enthusiasm and interest in math than do comparable students in more traditional programs.
3. *CSMP* students perform in traditional computation skills as well as comparable non-*CSMP* students.

In the past several years, McREL has conducted further development activities to update, enhance, and extend *CSMP* to its current *CSMP/21* edition. In doing this work, the developers surveyed all *CSMP* sites and worked closely with teachers in Colorado sites to address classroom needs for mathematics curricula. Close attention was given to ensuring that the

program aligned with both national and state standards for school mathematics.

What communities and states are using this program?

CSMP is presently in use in classrooms, buildings, or districts in over 35 states across the country.

What is involved in using this program in my school and community?

The program is to be taught by the regular classroom teacher in a regular classroom. No other personnel or facilities are required. Depending on the grade level of implementation, between 6 and 30 hours of training are recommended.

Materials consist of both nonconsumable items, which last about 5 years, and consumable items that may need to be replaced each year. There are no special equipment costs.

To implement this program effectively, a school or district should appoint a *CSMP* coordinator (normally the district mathematics supervisor) and agree on an implementation plan that provides for the training of teachers, the evaluation of the program, technical assistance, and support services.

Costs associated with implementing this program vary, depending on the components of the program being used.

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Literacy Plus

A Language Arts Framework for Kindergarten Through Eighth Grade Integrating Reading, Writing, Vocabulary, and Reasoning

Developed and tested by the Mid-continent Regional Educational Laboratory (McREL)

What is the idea behind *Literacy Plus?*

Literacy Plus is a program that takes a holistic, integrated approach to teaching language arts, including reading, writing, vocabulary, and reasoning. It is based on the stages of literacy development and provides a framework for instruction that supports student-centered learning. A Resource Guide provides teachers with over 180 strategies that are appropriate to different stages of literacy development, organized in such a way as to support the instructional framework. Literature units are available at all K through 8 grade levels and are based on various genres and themes. Although *Literacy Plus* is a literature-based approach to reading, it can also be used in conjunction with a basal reader.

Unique to *Literacy Plus* is a semantic cluster approach to vocabulary instruction. Individualized word books contain words in semantic clusters that provide an incidental learning situation, as well as a way for students to collect new words from literature, basal readers, and the content areas. *Literacy Plus* also shows how to bridge the gap between spelling and word meaning, and provides a framework from which individual spelling lists can be created with words from students' writing, reading, and work in the content areas.

What does research say about how this idea can help teaching and learning?

Literacy Plus is strongly supported by research that suggests that individual language arts should not be taught in isolation of each other nor should skills necessary for reading and writing be taught in isolation of actual reading and writing experiences. *Literacy Plus* thus attempts to blur the choice between a skills, or phonics, approach to instruction versus a whole-language, or literature-based, approach.

Although current research on vocabulary development supports wide reading and language-rich activities along with direct

vocabulary instruction, there is a strong need for a structure that allows direct instruction to reach beyond words taught directly, allowing students a place to store and learn new words within a context. *Literacy Plus* provides this structure within the classroom for the students.

How was this program tested?

Initially, a pilot site was established in a particular district. Data were collected to determine if student learning improved as a result of the implementation of this program. Studies included assessing student growth in reading comprehension and writing, including a measure of vocabulary growth in both areas.

Subsequent studies in various states have assessed student growth using a variety of measures, including pre- and post-standardized achievement tests, writing samples over designated periods of time, reading and writing performance assessments, teacher observations, running records, student self-assessments, and surveys.

What communities and states are using this program?

Literacy Plus is used in 43 states with the heaviest use being in the states of Alabama, Florida, Missouri, Nebraska, North Carolina, and South Carolina.

What's involved in using this program in my school and community?

Literacy Plus literature units can be used with little or no technical assistance or training as they are a fairly prescriptive approach to integrating the language arts. Each unit focuses on specific knowledge and skills and is composed of workshops which contain a mini-lesson, activity, and sharing period. Although each unit is supported by specific pieces of literature, other pieces of literature within the genre can be substituted.

The organizational structure of the Resource Guide is fairly straightforward, and it can be used in a variety of ways. The need for staff development or support will depend on how it is used. Many of the individual strategies can be used in the classroom without further explanation while others are more complex and require additional assistance. For exam-

ple, the integration of thinking and reasoning skills requires more thought and training and tends to make the planning of units more complex. Similarly, *Literacy Plus*' approach to vocabulary instruction varies greatly from a traditional approach and therefore requires an initial inservice to explain both the philosophy behind the approach as well as the use of the individual student word books.

Costs associated with implementing this program vary, depending on the components of the program being used.

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SEDL Follow Through Program

A Comprehensive Program for Language-Minority Children in Kindergarten Through Third Grade

Developed and tested by the Southwest Educational Development Laboratory (SEDL)

What is the idea behind the *SEDL Follow Through Program*?

Originally supported with funding from the Department's Follow Through Program which ended in 1994, the *SEDL Follow Through Program* has continued its development and enhancement of this effort to support early childhood education. The Southwest Educational Development Laboratory was a forerunner in bilingual education when it developed some of the nation's first bilingual curriculum materials in the mid-1960s for its language development approach.

The SEDL program was designed to help ensure English-language development and academic progress for low-income, language-minority populations in elementary schools. The program is adapted to the needs of the sites using these materials. These language development strategies are integrated throughout the school day with regular classroom content rather than as a separate language focus. SEDL's comprehensive program helps educators build first- and second-language acquisition in three ways:

1. by supplementing local curriculum with research-based instructional approaches;
2. through professional development for teachers; and
3. with active participation by parents.

The language development approach creates a positive learning environment through classroom arrangements, instructional organization, and management. Strategies include large- and small-group sessions, peer tutoring, paired learning, and individualized instruction.

What does research say about how this idea can help teaching and learning?

Language forms the core for both the strengths and weaknesses of students. While ascribing to the notion that language *is* thought, the language development approach operates under the assumption that language is key to communication, as well as a carrier and expresser of culture.

Research shows that children acquire language best through meaningful experiences. SEDL's language development approach has built-in provisions for integrating the language of the child into content areas traditionally disassociated from the study of English. Math and science lessons, for example, may be held in the language the child brings to the classroom or in English. There is always a language objective as well as a content objective.

Follow Through professionals strive to ensure that the student receives and internalizes concepts. Because the development of thought processes is essential to learning, and coping goes hand in hand with language acquisition, language development approach teachers are trained to create ways of communicating new concepts that can be understood and learned in *any* language. The same training applies to teaching analysis and problem solving.

SEDL's language development approach incorporates teaching and learning strategies developed from research on the nature of language and language acquisition processes. Such strategies provide for

- Optimal language input to allow comprehension of real messages and
- Opportunities for students to hear and use language in a wide variety of situations such as
  - — peer interaction in which students cooperatively learn subject content and receive language input and
  - — language instruction (with integrated language-development strategies) that is used throughout the school day rather than as a separate language focus.

The parent-involvement component is based on the premise that education should be a cooperative process involving the home, the school, and the community and that all parents can participate actively in their children's schooling. It places responsibility for parent involvement primarily on the school and encourages parent participation in decision making, school activities, and home study. It also provides for training of school staff and parents themselves, with parents helping to decide the focus of training.

How was this program tested?

The model has a long history of development, testing, and refinement, and has demonstrated increasingly posi-

tive results in evaluations. It was developed and has continued to be refined on the basis of

- research on first- and second-language acquisition and language teaching and learning;
- early childhood education;
- teacher professional development; and
- parent involvement.

Percentile rankings of children participating in this program, relative to a normative sample, consistently have increased from kindergarten through third grade. Observation and self-report data verify that local *SEDL Follow Through* staff have kept abreast of current educational practices and research, thereby enhancing local teaching methods and professional growth.

Parent interview data indicate more involvement in their children's education and an increase in skills and knowledge needed to help their children and to create feelings of self-worth in their children.

Over the years, research has shown that many strategies used by the *SEDL Follow Through* program are just plain good teaching strategies. Now, many mainstream teachers are using *Follow Through* strategies in classrooms not concerned with bilingual problems.

What communities and states are using this program?

The *SEDL Follow Through Program* has been implemented in 27 schools in California, Louisiana, New Mexico, Pennsylvania, and Texas. Lincoln School in Tulare, California, a continuous SEDL site for nearly 30 years, served as a Follow Through Resource Center.

What's involved in using this program in my school and community?

About 3 years are required for full implementation. An initial site visit by SEDL to explore goals, needs, and program requirements results in a proposal for initiating, expanding, and maintaining the implementation. Staff roles are assigned, and a schedule of implementation and monitoring activities is negotiated. In addition to the involvement of SEDL staff, local sites are expected to provide a project director, one or more teachers in whose classroom(s) the program will be implemented, a staff development specialist, and a parent-involvement coordinator.

Costs associated with implementing this program vary, depending on the components of the program being used.

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Strategic Teaching and Reading Project (STRP)

An Instructional and Professional Development Program for Kindergarten Through 12th Grade Designed To Improve Students' Reading

NCREL Developed and tested by the North Central Regional Educational Laboratory (NCREL)

What is the idea behind *STRP*?

After nearly two decades of sinking scores, researchers and expert practitioners concluded that students and their teachers need alternatives to the standard approaches to reading instruction. Partly in response to these needs, and partly because of growing evidence that skills-based curricula were not sufficient in helping students learn reading comprehension, the concept of an interactive, or strategic, approach to reading was born.

An interactive or strategic view focuses on reading not as the application of a set of skills, but as a process of constructing meaning. Constructing meaning begins before the reader actually engages in sustained reading, and it continues after the sustained reading stops. The reader links information in the text to his or her prior knowledge, then uses a repertoire of strategies to construct meaning.

The *Strategic Teaching and Reading Project* (*STRP*) grew out of this strategic reading concept. The project's objectives were (1) to improve reading instruction in all classrooms through sustained staff development, and (2) to improve the reading abilities of all students, at all levels, thus increasing reading skills across the content areas and promoting literacy as a lifelong goal.

To achieve these objectives, *STRP* focuses on professional development and is based on the premise that teachers *must* receive training and support in strategic teaching in order to help students become strategic readers and learners themselves. Research has indicated that effective and ongoing professional development is one of the key elements of effective teaching.

STRP views staff as *lifelong learners* who recognize the instructional benefits of constant exposure to new learning and, therefore, take responsibility for

- establishing learning goals for themselves;
- making decisions about their learning process;

- becoming resident (on-site) experts; and
- implementing a professional development plan relevant to their students' and school's needs.

Essentially a combination of professional development and classroom intervention, *STRP* has at its core five strategies:

1. the use of prior knowledge,
2. text structure,
3. word meaning, and
4. inferencing, with
5. metacognition integrated throughout the process.

These five strategies provide common tools within a framework for improved instruction in the content areas. *STRP* facilitates the team approach, which spreads the demands of instructional leadership among team members, builds on areas of expertise, fosters collaboration, and reduces threats to the continuity of the project that can come from staff turnover.

What does research say about how this idea can help teaching and learning?

The value of the skills-based curricula came under scrutiny a number of years ago. One important study involved observations of comprehension instruction in grades three through six. According to this study, teachers were, in fact, not *directly* instructing students in comprehension skills, but were merely *mentioning* those skills. Moreover, teachers were not instructing students to practice new skills nor were they assessing whether students used the skills properly. The study suggested that extensive use of skills-based curriculum does not help students learn what the comprehension skills are, how they should be applied, or why and when they should be used.

After years of research, today we know that

- Reading is a process of constructing meaning in which the reader connects information in the text to what he or she knows.
- To construct meaning, the reader actively interacts with the text and the context (including the task or purpose for reading).
- The reader uses a repertoire of strategies to understand the information in the text and to connect it to what he or she knows.
- The reader is aware of his or her repertoire of strategies and is in control of how he or she uses those strategies to construct meaning.

- The reader uses the strategies not only during but before and after reading the text.

We also know that

- When using a strategy, the reader stops to reflect on what has been read, thinks ahead to what will be read, and knows when to resume reading.
- While reading, the reader's prior knowledge and experience constantly interact with the particular characteristics of the text. The purpose or context for reading helps us construct meaning.

Significantly, in the *Handbook of Research on Improving Instruction in Student Achievement*, the Alliance for Curriculum Reform identifies strategic reading and writing as a solid, research-tested way to improve youngsters' reading achievement outcomes.

How was this program tested?

STRP was developed by the North Central Regional Educational Laboratory (NCREL) in partnership with the Wisconsin Department of Public Instruction, the Wisconsin Educational Communication Board, and 17 rural Wisconsin schools where the project initially was pilot tested.

The results of these tests showed a positive difference in the participating students, staff, and schools. For example, analysis of classroom practice indicated that the longer teachers were in the project, the more strategically they taught. More important, third grade *STRP* students scored as much as four-tenths of a standard deviation higher on the strategy sub-scale of the *Wisconsin Third Grade Reading Test* than third graders in comparison schools.

Subsequent evaluations across a broader range of 33 urban, rural, and suburban schools and various types of students indicate that students in *STRP* schools scored higher than students in contrast schools at both elementary and high school levels. On average across the tasks, 40 percent of *STRP* students scored in the two highest rating categories (proficient and advanced), while only 14 percent of the contrast students scored in these categories. Only 19 percent of the *STRP* students scored in the lowest rating category (below basic), while more than half (56 percent) of the non-*STRP* students scored at this level.

In addition, *STRP* students performed significantly higher on open-ended tasks that required them to interpret, link text to personal experiences, summarize, and

provide supporting evidence from the text. *STRP* students mediated their own comprehension—that is, they were aware when they understood or misunderstood much more frequently than were their counterparts.

After approximately 10 more years of pilot testing, revision, and refinement, NCREL has made the *Strategic Teaching and Reading Project* available to all schools nationwide.

What communities and states are using this program?

Over 135 schools and school districts and more than 1,100 K–12 teachers in 13 states use *STRP.* The following information highlights schools, districts, or other agencies that have made a major commitment to *STRP*:

- *STRP* was the basis for inservicing the 200 teachers taking part in the Chicago Public Schools Summer School Bridge Program.
- The Detroit Public Schools' Office of Curriculum and Instruction is sponsoring over 40 Detroit public schools to carry out *STRP.*
- School District #89 in Maywood, Illinois, has made *STRP* the focus of its language arts inservice program for 260 teachers.
- The Minneapolis/St. Paul Metro Educational Cooperative Service Center has trained 17 teams of elementary and secondary teachers in *STRP* and 18 of its own professional development staff as *STRP* trainers.
- The Pacific Resources for Education and Learning's *STRP* Training Center in Honolulu has trained 35 professional development specialists to be regional *STRP* trainers.
- Thirteen school districts in and around Kansas City, Missouri, have undergone *STRP* training.

What's involved in using this program in my school and community?

The *Strategic Teaching and Reading Program* consists of the following materials and services:

- ***The Strategic Teaching and Reading Project Guidebook,*** updated edition, has a concise and organized format that provides an introduction to the project, presents the research base for the five strategies, describes ways to make the transition from theory to reading instruction, suggests practical applications for each strategy, encourages professional develop-

ment through reflection on each strategy, and provides concrete examples of strategy use.

- **"An Introduction to the Strategic Teaching and Reading Project" videotape,** updated edition, features four multilevel, cross-curriculum, strategic classrooms. The video supplements and reinforces the content and framework of the guidebook. It may be used as a staff development tool.
- **A set of six audiotapes** also reinforces and supplements the content of the guidebook and features a detailed explanation of each strategy. The audiotapes are "Introduction," "Metacognition," "Prior Knowledge," "Word Meaning," "Inferencing," and "Text Structure."
- **On-site training and staff development sessions** that are highly interactive and include practical applications of the project tailored for your district or your school and teachers.

Costs associated with implementing this program vary, depending on the components of the program being used.

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Success for All and Exito Para Todos

An Early Elementary School Program for At-Risk Youth

WestEd Developed and tested by Johns Hopkins University Center for Research on the Education of Students Placed at Risk (CRESPAR); adapted for students with limited English proficiency by WestEd

What is the idea behind *Success for All*?

Success for All is based on the premise that, given the right support, every child can learn. A schoolwide restructuring program for pre-K through grades five or six, *Success for All* and *Exito Para Todos* focus first and foremost on reading, with the aim being to ensure that virtually every student reads at or above grade level by the end of the third grade. The focus is on reading, explains one program staffer, because when children learn to read, they can spend the rest of their lives reading to learn.

Participating schools reorganize and coordinate all their resources to ensure that every child succeeds. Curriculum, classroom organization, and management and assessment are all focused to provide excellent early learning. In addition, the program stresses early intervention strategies such as one-to-one tutoring for students (especially first graders) who experience difficulty with reading, and working with parents and social agencies to address problems that interfere with students' success. Staff members learn to be relentless; their credo is never give up—try everything.

In that vein, WestEd has been adapting *Success for All* to more effectively serve students with limited English proficiency (*Exito Para Todos*). In tailoring the program to schools with large minority language populations, WestEd has included, for example, the use of bilingual reading materials, staff development sessions for bilingual education teachers and tutors, and training sessions for school staff working with family support teams.

What does research say about how these ideas can help teaching and learning?

Research confirms the value of this comprehensive approach with its carefully targeted components. Longitudinal studies, using matched control students in matched schools, indicate that *Success for All* improves achievement. *Success*

for All students in five Baltimore schools had significantly higher reading achievement compared with matched controls; they surpassed control students by 3 months in first grade and by a full year in fifth grade in average grade equivalents. Students who scored in the lowest 25 percent on the pretest—those considered most at risk—showed the most improvement.

Research has also found that compared to other Chapter 1 (Title I) schoolwide projects, *Success for All* reduces retention and assignments to special education while increasing attendance. Reduction in retention is an element of the program rather than an outcome; however, passing marginal students while providing them with additional academic support does seem to have promoted greater gains than were engendered by retaining the control students.

How was this program tested?

A common design has been used in all *Success for All* evaluations. Every *Success for All* school involved in a formal evaluation is matched with a control school that is similar in poverty level, ethnicity, and other factors. Children in the *Success for All* schools are then matched either on district-administered standardized test scores given in kindergarten or scores on the Peabody Picture Vocabulary Test given by the project in the fall of kindergarten or first grade. The measures used in the evaluations were the Woodcock Reading Mastery Test, the Durrell Analysis of Reading Difficulty, and the Gray Oral Reading Test.

Evaluations in other *Success for All* schools, including those in California using *Exito Para Todos*, reiterate the Baltimore findings. First graders in Spanish bilingual programs scored at grade level and more than 6 months ahead of comparison students. Again, the benefits were greatest for students in the lowest 25 percent of their classes. Students with various language backgrounds who participated in a *Success for All* English-as-a-second-language program also outperformed their comparison counterparts.

What communities and states are using this program?

As of September 1996, *Success for All* and *Exito Para Todos* were being implemented in over 450 elementary schools in 90 school districts in 31 states. Among the many and varied *Success for All* sites

are schools located in Montgomery, Alabama; Dade County, Florida; Rockford, Illinois; Ft. Wayne, Indiana; Baltimore, Maryland; Flint, Michigan; Philadelphia, Pennsylvania; Memphis, Tennessee; Houston, Texas; and Charleston, West Virginia.

As a *Success for All* regional training center, WestEd provides support to schools in the Southwest. During the 1995–96 school year, it provided training for 17 California elementary schools, 8 schools in Arizona, and, in cooperation with Johns Hopkins University, 7 schools in a special project in Houston, Texas. An additional 26 schools in those states and Utah began implementation with WestEd support in 1996–97.

What's involved in using these programs in my school and community?

The *Success for All* programs combine a research-based preschool and kindergarten program; a beginning reading program that integrates effective phonics instruction with meaningful context through the use of *Shared Stories*, phonetically regular mini-books that students read with the teacher; homogenous reading groups during a daily 90-minute reading period; one-on-one tutoring; cooperative learning approaches to intermediate reading; frequent student assessment to ensure progress; family support services to increase parent involvement; and a campus-based project facilitator to coordinate the many program elements and to provide continuing on-site training and technical assistance.

A central element is the one-on-one tutoring for students having difficulty reading, especially in the early grades. Ideally, this tutoring is provided by certified teachers, but some schools are using teacher aides. Reading materials for *Success for All* schools are provided by the program developer. *Every Child, Every School: Success for All*, available from Corwin Press, describes both the Program and research outcomes.

Implementing *Success for All* requires awareness training, a vote for implementation by 80 percent of the staff, on-site staff development, follow-up site visits, technical assistance, and an annual conference for new and experienced sites.

In some localities, schools have been able to cover the cost of the additional staff and resources needed to implement *Success for All* by redirecting Title I, Title II, Title VI, and other categorical funds from pull-out and supplementary programs.

Costs associated with implementing this program vary, depending on the components of the program being used.

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Vocational Mentoring

An Experience-Based Career Education Program for High School Juniors and Seniors at Risk of Not Graduating

Developed and tested by the Northwest Regional Educational Laboratory (NWREL)

What is the idea behind *Vocational Mentoring*?

Vocational Mentoring was developed by Portland Public Schools (Grant High School) to serve underachieving youths who do not necessarily qualify for educational service programs that have income and other restrictive criteria. Modeled after the successful Experience Based Career Education (EBCE) program started in 1971 by NWREL, *Vocational Mentoring* provides an integrated approach to career development, vocational training or apprenticeship, and academic achievement.

NWREL has provided technical assistance and staff training for vocational mentoring and will assist other communities interested in adapting the model. The program is grounded in the skills and attitudes that the business community deems critical for success. The goal is for each participant to graduate from high school with demonstrated employability skills, a well-defined occupational focus, and a plan for further education or training.

Students involved spend half a day in regular high school and half a day in the *Vocational Mentoring* program. In Portland, the program is housed in a comprehensive medical facility, chosen because of the wide variety of occupational opportunities it offers students. Career explorations range from the dialysis center to the surgery recovery room, from clerical work and food service to gardening and maintenance.

Students spend a portion of their time working on two required academic subjects in the learning center (space donated by the hospital), and the remaining time working alongside vocational mentors. These are hospital employees who have agreed to help students learn the general employability skills needed to succeed at any job, as well as the specific skills required for selected occupations.

Classroom subjects are taught in the context of occupational realities confronted daily by the student and mentor. An essential element of program design is to teach students that basic skills are necessary and used in the workplace. This provides meaning for students who may not

realize the value of classroom learning. Typical *Vocational Mentoring* strategies include career exploration, internships or apprenticeships, individualized learning projects, individual and group counseling, and employability seminars.

Participants in the program are representative of the 25 percent of youth who never obtain a high school diploma. They are students who have done poorly in the traditional high school setting and who face numerous barriers to successful transition to higher education or entry into the labor market. Portland's *Vocational Mentoring* program was made up mostly of inner-city, minority, and low-income students. Nearly all had poor attendance records and below average or average grades before participating in the program. In addition, many were involved in gang activity, the juvenile justice system, drug and alcohol abuse, or teen parenting.

What does research say about how this idea can help teaching and learning?

The *Vocational Mentoring* program came to life during a time of large-scale reflection, legislation, and statewide planning concerning the quality of Oregon's work force and education system. *Vocational Mentoring* began in 1989 as a significant component of Portland's growing portfolio of dropout prevention programs. Participants were juniors and seniors who were at risk of not graduating due to lack of credits, lack of motivation, and lack of understanding the connections between learning and earning.

Additional concern stemmed from a report issued in 1990 by the National Center on Education and the Economy entitled *America's Choice: High Skills or Low Wages.* It found American business was losing its competitive edge. It concluded that productivity growth was only a fraction of what it had been in the 1960's, and it was significantly lower than that of international competitors. It also cited that cheaper foreign labor and improvements in production equipment and processes had replaced the need for many American low-skill jobs.

Taking all of this into account, and because job growth is predicted in areas demanding higher skills than ever before, programs such as *Vocational Mentoring* make a calculated effort to expose at-risk high school students to the realities of today's workplace. The program is cognizant of the fact that students in this target group are often contextual learners, meaning that they need to see both the big picture and the rationale for what they are learning. Putting students in daily contact with the work force creates this context for them.

The American Society for Training and Development's report, *Workplace Basics, The Skills Employers Want* and *The Secretary's Commission on Achieving Necessary Skills Report* (The SCANS Report from the Department of Labor) both very clearly define the skills that are critical for success in today's work force. These skills include problem solving, communication, flexibility, initiative, and knowing how to use resources. In other words, employers now want more than "a strong back and willing hands." *Vocational Mentoring* concentrates on teaching these essential skill areas so that its students graduate with a sense of confidence and self-direction. Assessment is authentically conducted in the context of individual student goals and the community-based program design.

How was this program tested?

Knowing that "the model works" for Experience Based Career Education (EBCE), Portland chose to adapt it for a very at-risk population, and to house it in a hospital in order to closely approximate the real world of work.

Of the participants involved in the program to date, approximately 85 percent have remained in the program, thus preventing the majority of these very high-risk students from dropping out of school. Improvements in grade point averages (GPAs) and credits earned also indicate that *Vocational Mentoring* is a successful strategy. The following statements describe the performance of 27 sample students involved in the program, comparing grade point averages and credits earned during the spring semester of the year before the students were involved with the program to those of the fall semester of the next year when they were program participants:

- The average GPA for the group went from 1.17 to 2.07.
- The average number of earned credits rose from 1.81 to 2.28.
- Fifty-six percent more than doubled their GPA from the previous semester.
- Eighty-nine percent of the students improved their GPAs.
- Sixty-three percent received a 2.0 or better during the semester in which they participated in *Vocational Mentoring*.
- Sixty-seven percent of participants increased the number of credits they received.
- An additional 7 percent maintained the number of credits earned, totaling 74 percent who maintained or improved their credits.

- For three of the students (11 percent), it was the first semester they had ever passed all of their classes.

What communities and states are using this program?

Schools in the Portland, Oregon, area continue implementing this program in a variety of settings.

What's involved in using this program in my school and community?

Many variables are involved with the cost of implementing *Vocational Mentoring*. Schools interested in the program need to make provision for training the staff, recruiting business partners, planning individualized curriculum that integrates work and learning, setting up a learning center (if not housed in a classroom), and purchasing of classroom materials and supplies. Daily operational costs include one teacher per approximately 20 students, an instructional assistant and clerical aide, transportation for students if the program is off campus, maintenance of a business advisory council, and insurance if district coverage is inadequate for chosen program logistics and strategies.

The *Vocational Mentoring* program revolves around collaboration with the business community and, while the program in Portland is housed in a hospital, it need not be located in the business itself. The original EBCE model uses the business community as a learning resource with the learning center on the high school campus or in a building operated by the school. The program can exist in a business, as an off-campus learning program, or even as a school-within-a-school. It can be full or part time and open to the entire student body.

A program such as *Vocational Mentoring* can be implemented in any setting, urban or rural, as evidenced by EBCE success. It is a program that is very adaptable to any community large or small, rich or poor, and to many different types of businesses, providing they can offer a wide variety of work experience and dedicated mentors.

Key steps to implementation include

1. Study the student needs and determine potential resources.
2. Prepare a comprehensive plan for adapting and implementing the program.
3. Secure business community commitment.
4. Recruit students.
5. Pilot the program.

6. Assess the program and student outcomes and modify the program as needed.

A minimum of 4 months would be required for steps 1–4, but 6 months would ensure a higher quality result.

Costs associated with implementing this program vary, depending on the components of the program being used.

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Dimensions of Learning

A Framework for Planning Instruction Based on Constructivist Learning

McREL Developed and tested by the Mid-continent Regional Educational Laboratory (McREL)

What is the idea behind *Dimensions of Learning*?

Dimensions of Learning is a learning-centered framework for instructional planning that translates the latest research on cognition and learning into practical classroom strategies. The framework serves at least three major purposes. First, it provides a framework for organizing, describing, and developing research-based teaching strategies that engage students in the types of thinking involved in meaningful learning. Second, it offers a way of integrating the major instructional models by showing how they are connected and where the overlaps occur. And, perhaps most important, it provides a process for planning and delivering curriculum and instruction that integrates much of the research on effective teaching and learning.

The *Dimensions of Learning* model assumes that five aspects of learning should be considered when making decisions about curriculum, instruction, and assessment:

Dimension 1: Positive Attitudes and Perceptions About Learning
Dimension 2: Acquiring and Integrating Knowledge
Dimension 3: Extending and Refining Knowledge
Dimension 4: Using Knowledge Meaningfully
Dimension 5: Productive Habits of the Mind

What does research say about how this idea can help teaching and learning?

Dimensions of Learning is a direct descendent of the comprehensive research-based framework on cognition and learning described in the 1988 book entitled *Dimensions of Thinking.* The research and theory explicated in this book says teachers can improve the quality of teaching and learning in any content area using the six basic assumptions that are implicit in the *Dimensions of Learning* model.

These six basic assumptions are

- Instruction must reflect the best of what we know about how learning occurs.

- Learning involves a complex system of interactive processes that includes five types of thinking—the five dimensions of learning.
- What we know about learning indicates that instruction focusing on large, interdisciplinary curricular themes is the most effective way to promote learning.
- The K–12 curriculum should include explicit teaching of higher-level attitudes and perceptions and mental habits that facilitate learning.
- A comprehensive approach to instruction includes at least two distinct types of instruction: one that is more teacher-directed and another that is more student-directed.
- Assessment should focus on students' use of knowledge and complex reasoning rather than their recall of low-level information.

How was this program tested?

Willow Creek Elementary School in Englewood, Colorado, under the leadership of principal Deena Tarleton, agreed to developmental testing of the *Dimensions of Learning* framework and strategies. After this first year of testing in a single school, the Association for Supervision and Curriculum Development and McREL cosponsored a Dimensions of Learning Research and Development Consortium composed of nearly 90 members representing various schools, districts, institutions of higher education, and state departments of education across the United States and Mexico. During 1989 and 1990, consortium members learned the *Dimensions of Learning* strategies, field tested them in classrooms, reported results, and suggested revisions to the team of authors.

During 1990 and 1991, consortium members continued to use the *Dimensions of Learning* strategies and met in subgroups to assist the author team with the final development of training materials by responding to proposed text, developing examples, writing vignettes, and suggesting various revisions. *Dimensions of Learning* is undoubtedly stronger and more "classroom friendly" because of this intensive work with the many talented educators involved in the project.

What communities and states are using this program?

Dimensions of Learning is used in 40 states and several European and Asian countries. It has also been translated into Spanish.

What's involved in using this program in my school and community?

It is important for a school district first to be clear about the nature of their long-term instructional improvement goals. *Dimensions of Learning* can be used for four purposes that represent four levels of implementation ranging from Level One, which focuses on an informational overview of the *Dimensions of Learning* framework, to Level Four, which encompasses using the program as a restructuring vehicle for systemwide change in curriculum, instruction, and assessment.

Training can be conducted by a McREL trainer or by a trainer within the district. *Dimensions of Learning* training materials are available through the Association for Supervision and Curriculum Development.

Costs associated with implementing this program vary, depending on the components of the program being used.

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Improving Multigrade Classroom Instruction in Small, Rural Schools

A Series of Workshops for Educators Interested in Multigraded Classroom Instruction

Developed and tested by the Northwest Regional Educational Laboratory (NWREL)

What is the idea behind *Improving Multigrade Classroom Instruction in Small, Rural Schools*?

This program was created for teachers and administrators in rural areas who have an identified interest in or need for multigraded classroom instruction. It is a series of workshops designed around the resource handbook *The Multigrade Classroom: A Resource Handbook for Small, Rural Schools* developed by Northwest Regional Educational Laboratory (NWREL). Each workshop can be tailored to a given site and relies heavily upon activities that model actual classroom practices of multigrade teachers. The following workshop topics are available:

- a review of the research on multigraded classrooms;
- classroom organization;
- classroom management and discipline;
- instructional organization and curriculum;
- instructional delivery and grouping;
- self-directed learning; and
- planning and using peer tutoring.

The material and training are designed for multigrade and multi-age classrooms from any combination of 2 to 13 grades within a single classroom setting.

What does research say about how this idea can help teaching and learning?

Over 105 separate research articles and reports were used in the development of *The Multigrade Handbook*. The first chapter of the handbook reviews research that was specifically focused on multigrade organization and instruction and has been published in *Research Education* (Fall 1990 and Winter 1991). Subsequently, chapter 1 was published in *The Journal of Research in Rural Education*. The remaining chapters of the handbook draw heavily on research on effective instruction and learning cognition. Each chapter has a reference and resource section for those desiring additional information.

Research evidence indicates that multigrade instruction has a significant positive impact on student attitudes and tends to enhance achievement outcomes under positive implementation conditions.

How was this program tested?

Improving Multigrade Classroom Instruction in Small, Rural Schools was tested in 16 different settings, under varying goals and circumstances. Participants in the workshops included individuals from throughout the United States, as well as educators from other countries. The focus of each workshop was a little different, because the diversity of participants and the specificity of their classroom needs varied.

Where implementation was carefully planned, multigrade organization has been successful. A national network of multigrade educators has been formed.

What communities and states are using this program?

This program has been or is currently being used in virtually every state in the union and in Guam, the Marshall Islands, Palau, Indonesia, Canada, and Jamaica. Many different education stakeholders, including teachers, principals, board members, state department of education personnel, and university faculty have taken part in the workshops.

What's involved in using this program in my school and community?

Resources required to implement this program include the following:

- *The Multigrade Handbook*;
- *The Multigrade Training Guide*;
- training packets—existing packets plus the cost of modifying them for local needs, or developing new packets of training materials, or both;
- typical equipment for a workshop such as an overhead projector, VCR, felt markers, chart pack, copies of training materials, and tape;
- development equipment such as a laser printer and a powerful computer running Windows, Word, and PowerPoint; and
- staff time involving reading and using guide materials for planning and organizing their own classroom.

Beyond these considerations, it is important to note that implementing this practice is both complex and time-consuming. The following steps have been successful in the past:

1. A request is made for information or service to meet a need.
2. The need is examined from as many perspectives as possible—community, administrative, teacher, and student.
3. A treatment or strategy is developed and shared with those requesting the service, and an agreement is reached.
4. That treatment or strategy is implemented.

Provision for follow-up is highly recommended, either at the level of the provider (NWREL) or at the local level. Time for these steps varies depending upon the nature of the request.

The Multigrade Handbook and *The Multigrade Training Guide* are the primary materials used, with numerous variations having been developed for specific sites and applications. A network of schools and classrooms (multigraded, ungraded, and multi-aged) can also be accessed. In addition, those multigrade teachers who participated in the development of *The Multigrade Handbook* may also be resources.

Costs associated with implementing this program vary, depending on the components of the program being used.

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Peer-Assisted Leadership (PAL)

A Yearlong Program of Professional Development for Educational Leaders Involved in School Improvement

WestEd Developed and Tested by WestEd and Far West Laboratory

What is the idea behind *Peer-Assisted Leadership*?

Some 15 years ago, researchers at Far West Laboratory for Educational Research and Development—now WestEd—set out to learn more about how school principals influence teaching and learning. Using qualitative, anthropological methods, they spent much of 2 years at school sites "shadowing" and conducting reflective interviews with principals.

As it turned out, the researchers weren't the only ones learning. Principals reported that the experience of being research subjects had helped them grow professionally, giving them insight into their own practice and a sense of being supported.

That raised an intriguing possibility: why not design a program that would, in effect—and in fact—make principals each other's and their *own* research subjects? The result was the *Peer-Assisted Leadership* program in which principals form partnerships to help each other reflect upon their respective organizations, their leadership, and how one affects the other. Today's administrators grapple with the challenges of leading their schools in an era of rapid change and heightened expectations. As a result, their capacity for reflection, inquiry, and analysis becomes increasingly important. In developing *PAL*, program staff saw a means to help principals develop that capacity.

In this nonjudgmental, inquiry-based approach to leadership development, *PAL* partners work together over a period of 4 to 8 months, shadowing and interviewing each other to collect data and analyze their leadership activities in context. A growing mutual trust provides fertile ground for candid exchanges of ideas, deep reflection, and self-analysis, while *PAL*'s conceptual framework helps them see the big picture of schools as systems.

Participants also meet regularly as a group, learning and practicing various inquiry skills (e.g., shadowing, interviewing, theme identification), as well as sharing and processing their partnership experiences. These meetings, together with the partnerships, provide a supportive forum for professional dialog that reduces isolation, deepens understanding, and supports change.

What does research say about how this idea can help teaching and learning?

PAL was developed as a result of a research program—the Instructional Management Program—that examined the work of successful school leaders. The research found that

- There is no one right way to be a successful school leader.
- Successful school leaders conduct their daily activities guided by long-term goals and "big picture" thinking.
- School administrators are professionally isolated.
- The process of being observed and interviewed about one's work can stimulate administrators' professional growth.

In its attempt to address those factors, *PAL*'s self-guided professional development is in keeping with principles of constructivism and adult learning. It also reflects current concepts of professional networks, communities of learners, and learning organizations. Research in these areas has illustrated the importance of dialog, self-reflection, and community among the members of an organization if change and improvement are to occur. *PAL* participants, interacting as part of a professional community, improve inquiry and dialog skills that, in turn, can be applied to change efforts at their schools. One of the most important aspects of the *PAL* experience, as voiced by one participant, is that a principal's personal experience of collaborative and constructivist professional development encourages him or her to support teachers to learn in the same way.

How was this program tested?

During the initial development year, program staff worked with a volunteer group of 14 principals who piloted the effort and served as an advisory group in refining the process. A standardized self-report survey has been used to gather data on the experiences of participants in subsequent groups; survey results allow WestEd staff and other certified *PAL* facilitators to document outcomes and to continue fine-tuning the program. Results indicate that participants experience benefits in both affective and cognitive areas. Some common benefits are

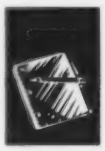
- validation, renewal, and support;
- clarification of goals;
- reduced isolation;
- increased capacity to think globally and systemically about the school and the leader's role;

- improvement in the skills of observing and interviewing;
- increased reflection and self-analysis;
- a broadened repertoire of effective leadership strategies; and
- transfer of skills used in *PAL* to the workplace—with teachers, students, and others.

Additionally, a survey of all past participants was conducted at the end of the third year to determine if the program had sustained effects. Barnett and Mueller showed that participation in *PAL* promoted sustained changes in principals' actions and activities, particularly in causing them to more routinely examine their actions against their professional belief systems and longer-term goals. In another example of sustained results, participants from one school district continued to meet as a group after their *PAL* experience and became a forum for problem solving and for influencing district policies and practices.

What communities and states are using this program?

By working directly with groups of school leaders and by certifying others to deliver the program, WestEd's *PAL* staff have disseminated the program broadly in the United States and internationally. Within the United States, approximately 2,000 school leaders in 15 states and the District of Columbia have participated, and approximately 45 *PAL* instructors have been certified. In Canada, about 200 principals in three provinces have participated in groups led by about 18 Canadian *PAL* facilitators. Several groups of private school heads in Australia have participated in an adapted version. The staff of a *PAL* training center at the University of Amsterdam, established in the early 1990's, has worked directly with hundreds of Dutch administrators and has prepared more than two dozen facilitators from eight European countries. The program has been translated into several languages.



What's involved in using this program in my school and community?

PAL is implemented at the school level in one of two ways—either by WestEd trainers or by a local team (or teams) trained and certified by WestEd. The team of instructors leads the formal meetings and, guiding participants through the process, provides instruction and practice in the various skills partners use with each other, and offers feedback on their application of these skills.

While other formats are possible, *PAL* is typically implemented with a group of 12 to 24 participants who meet together five or six times over a period of 4 to 8 months. *PAL* participation also requires individuals to be away from their schools for several visits of 3 to 4 hours each to the partner's school. It is important for school district administrators to be aware of these program requirements and to support participants' engagement in this professional development process. Because each participant needs to work with a peer partner, which includes multiple visits to the partner's school, WestEd recommends that groups not be too geographically dispersed and that the distance between partners' schools be relatively short.

The group need not be composed entirely of principals; anyone involved in a leadership role can benefit from this experience. Although it is often the case that a group comes from a single school district, this is not necessary; cross-district groups and cross-district partnerships have both worked very well.

Instructor preparation and certification is available from WestEd for districts, intermediate agencies, and state departments wanting the capacity to deliver *PAL* to their audiences. The instruction includes 6 days of training in three sessions (one 3-day session, one 2-day session, and a single day at the end), typically distributed over the course of a school year. WestEd requires the enrollment of a two- or three-person instructor team for this training.

As part of the certification process, each team is expected to implement the *PAL* program with a group of principals over the course of the year. WestEd staff, in addition to leading the training sessions, conducts a direct observation and feedback session for each team as it implements the program. *PAL* instructor certification allows individuals to disseminate the program using both the *PAL* name and the copyrighted materials available from WestEd. In addition, certified *PAL* instructors earn the right to modify and adapt the process for other audiences and delivery formats.

Costs associated with implementing this program vary, depending on the components of the program being used.

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Questioning and Understanding To Improve Learning and Thinking (QUILT)

A Program Designed To Enhance Student Learning by Improving Teachers' Classroom Questioning Techniques

Developed and tested by the Appalachia Educational Laboratory (AEL)

What is the idea behind *QUILT*?

QUILT is a staff development program designed to increase students' true thinking time by helping teachers improve their classroom questioning techniques. Asking more effective classroom questions can encourage all students to think at higher cognitive levels and ask questions of their own that will ultimately lead to improved learning.

QUILT complements and supports many existing staff development programs. Schools have reported that the *QUILT* program helped pull together some diverse programs to create a better understanding of teaching and learning. AEL has had reports that *QUILT* is complementary to the following programs: TESA (Teacher Expectations and Student Achievement), Cooperative Learning, Madeline Hunter's ITIP, Integration Across the Curriculum, Dimensions of Learning, Whole Language, and Higher Order Thinking Skills.

The development of this program was truly a collaborative effort forged with the talents and energies of teachers, principals, and administrators from five school districts in Kentucky, along with the staff at AEL. The program evolved from the creativity and work of many—much like the folk tradition of a quilting bee. And similarly, the model program has spread to schools throughout Tennessee, Virginia, West Virginia, and beyond the Laboratory region.

QUILT is an intensive, yearlong program not bound by grade or content area. A personal commitment from participants is necessary for success with the program. Schools send an administrator and a team of teachers to national training, where they learn how to facilitate *QUILT* with their own faculty. *QUILT* has three major components:

- **Induction training**. Teachers learn about effective questioning techniques during a 3-day (18-hour) introductory training period conducted by members of a local facilitation team.
- **Collegiums**. Participants meet in seven 90-minute seminars

throughout the school year to learn, share, and interact about particular questioning behaviors targeted for practice and improvement.

- **Partnering**. Teachers observe and are observed by partners six times during the year.

Elementary, middle, and junior and senior high schools have successfully implemented *QUILT*. Both large and small schools have enjoyed success with the program with faculty size ranging from 8 to more than 80 teachers. Larger faculties may require more members on the local facilitation team to be able to conduct the collegiums.

What does research say about how this idea can help teaching and learning?

Classroom questioning practice has been the focus of numerous education researchers for over 100 years. Although it is widely assumed that classroom questioning promotes student thinking and learning, research in actual classrooms indicates that current practice falls far short. Consider the following: over 40 percent of classroom instructional time is spent asking questions, and as many as 40 to 50 questions are posed in a typical 50-minute class segment. Most of these classroom questions are not well prepared and do not serve the purpose of prompting students to think. Usually questions serve the purpose of having students verbalize what has been taught. In fact, teachers do not give students time for true thinking.

Classroom studies have also shown that lower-achieving students receive fewer opportunities to answer questions than other students. On the average, teachers wait less than 1 second for a student response. This is in contrast to the findings that when teachers wait 3 to 5 seconds after asking a question, students give longer, higher-level responses; answer with more certainty in their own responses; make more inferences; and ask more questions.

Question-asking indicates that someone is curious, puzzled, and uncertain; it is a sign of being engaged in thinking about a topic. And, yet, very few students ask questions; rarely is even one student question posed in a typical class. Consistently, classroom research finds a large gap, with both students and teachers, between typical questioning and effective questioning that can affect student achievement. The QUILT model, which is the basic content for the program, views questioning as a complex, dynamic process governed by teacher behavior at critical junctures. The QUILT model has five stages:

Stage 1: Prepare the question

- Identify instructional purpose
- Determine content focus
- Select cognitive level
- Consider wording and syntax

Stage 2: Present the question

- Indicate response format
- Ask the question
- Select respondent

Stage 3: Prompt student responses

- Pause after asking question
- Assist nonrespondent
- Pause following student response

Stage 4: Process student responses

- Provide appropriate feedback
- Expand and use correct responses
- Elicit student reactions and questions

Stage 5: Critique the questioning episode

- Analyze the questions
- Map respondent selection
- Evaluate student response patterns
- Examine teacher and student reactions

Research about effective professional development for teachers is reflected in the *QUILT* model. First, the phasing of activities over an entire school year acknowledges that change is a process that occurs over time. Second, the structure is consistent with theories that teachers learn and improve performance when provided opportunities to acquire a relevant knowledge base, observe demonstrations, practice new behaviors, and receive feedback regarding performance.

How was this program tested?

During 1991–92, the *QUILT* program was classroom tested in 13 school districts with more than 1,200 teachers across AEL's four-state region. At one school in each district, teachers received the complete, yearlong *QUILT* program beginning with a 3-day induction training, seven follow-up sessions, and teamwork with colleagues throughout the school year. Teachers at two comparison schools in each district received an abridged version of the training lasting either 3 days or 3 hours. These comparisons more closely resemble traditional staff development than does the complete *QUILT* program. At all three schools in each district, before-and-after tests measured what teachers knew about asking questions, what attitudes they held that might facilitate or impede effective asking of questions, and how they actually asked questions in class as revealed in videotapes.

From the analysis of these test data, the *QUILT* program can claim to show an increase in teacher *understanding* of

effective classroom questioning and a corresponding *use* of effective questioning practices along with an increase in student thinking. As measured by coded videotapes, students in grades kindergarten through 12 answered at higher cognitive levels significantly more often after their teachers participated in the *QUILT* program. These students also asked significantly more clarifying questions than did students whose teachers were in a comparison treatment group.

What communities and states are using this program?

The power of good questioning to stimulate students' thinking has been the compelling idea contributing to the growing awareness of *QUILT* throughout the United States. *QUILT* has been implemented in schools in 13 states and 5 territories. *QUILT*'s training-of-trainers approach has been helping school districts prepare cadres of local teachers who then train others in their schools, districts, and states. AEL staff has instructed more than 650 *QUILT* trainers who have presented the materials to about 4,600 teachers. Expectations are to add 300 to 400 teachers a year.

Sustaining features of the program exist as well, including booster conferences for local facilitators and renewal meetings for those schools involved in the second year of *QUILT*. Beyond contact with those practicing *QUILT*, the Laboratory staff members continue ongoing program analysis and discussion to improve their efforts to promote and sustain change in teaching cultures.

What's involved in using this program in my school and community?

At each school, the *QUILT* program is led by a local team of three to five members who have been trained by the Laboratory or an AEL-certified trainer. The local training team ideally includes classroom teachers and a school administrator. The Laboratory holds a national training-for-trainers session during the third week of June in Lexington, Kentucky.

The *QUILT* staff development program has been successfully implemented under a variety of circumstances. However, Laboratory staff believes that *QUILT* is most appropriate when the following factors are present:

- The school principal provides support, is committed to the program, and is actively involved in the program.
- Teachers understand the time commitment required for the program and receive appropriate incentives for participation.

- The program meets a school need identified both by school administrators and teacher participants.

Costs associated with implementing this program vary, depending on the components of the program being used.

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Teaching Cases: New Approaches to Teacher Education and Staff Development

A Program That Supports the Development and Use of Cases in Education

WestEd Developed and tested by WestEd

What is the idea behind *Teaching Cases*?

Patterned after a method long used successfully to prepare lawyers and business professionals, case discussions in education focus on detailed scenarios written about the real life experiences of teachers or administrators. WestEd's use of cases is based on the recognition that the work of educators, also, is informed not only by research but by experience. Because cases reflect reality, they help teachers learn to connect theories and concepts to the complex, idiosyncratic world of practice. Discussion of cases enhances analytic thought, reflection, inquiry, and, with some cases, content knowledge.

Take the Mathematics Case Methods project, for example. Although it is WestEd's first effort to develop content-specific cases for educators, it grew out of and has paralleled their broader case work, which has developed casebooks that address such topics as diversity in the classroom, the middle school experience, teacher mentoring, and teacher interning. While it's been said that great teaching is the merging of masterful pedagogy—the process of teaching—and deep knowledge of the subject matter, WestEd's work with math cases is premised on the belief that great teaching is even more than that. Teaching skills are not generic to age levels and subject areas. Rather, successful teaching is distinctly different for different subjects, different learners, and different settings. To be successful, teachers need deep pedagogical content knowledge—the ability to see the particular subject through the eyes of the student and to know what instructional experiences can be used to capitalize on that child's thinking.

In the math cases project, teachers develop this capacity through the careful and exciting process of reflection and inquiry generated by facilitated discussions with other teachers about math cases that portray real-life teaching dilemmas. In one case, for example, a student asks the teacher: "How can 100 percent of something be just one thing?" The question, itself, can give a teacher pause. Although most of us would agree that 100 percent means the whole thing or "one," the concept can be confusing. If you poll

23 people and 100 percent respond that they like toothpaste, does 100 percent mean 23 or 1? What seems obvious on the surface is really quite complex when you're trying to promote understanding of a concept and not just memorization of a rule.

As illustrated in that case, many mathematics concepts are more complex than they might initially seem. Prone to being misunderstood in a variety of ways, they are not easily "taught" in the traditional sense of imparting knowledge. In fact, after participating in the Mathematics Case Methods project for several years, one sixth-grade teacher concluded that her job wasn't actually to *teach* math at all. Instead, she had come to see her role as that of a helpful guide for students in their own idiosyncratic journeys toward mathematical understanding. Her experience with cases, she said, had made her realize the importance of getting inside her students' minds, "listening to what kids are thinking and understanding" as they grapple with new mathematical concepts.

Whether cases are content specific or deal with broader teaching issues, case discussants examine different approaches to teaching and learning, considering the benefits and drawbacks of each. Individual teacher learning is amplified as the reflective and analytic skills honed in case discussions spill over as "strategic inquiry" in their own classrooms. Even more powerful for an individual teacher is developing his or her own case that communicates a pivotal teaching experience. Two additional results of this teacher-to-teacher professional development are

- accelerated, districtwide capacity building and
- long-term community building within other professional development or school restructuring programs.

Now under development are a casebook on using group work as a teaching strategy and, in the Mathematics project, a collection of cases for use by primary teachers and another to be used for classroom discussion by students with teachers serving as facilitators. While some of the casebooks are written by researchers, the majority are developed by practitioners themselves, working with WestEd case development staff. WestEd also works with other labs and institutions as they develop and use cases.

What does research say about how this idea can help teaching and learning?

The last few years have seen growing consensus that cases—used for both pre-

service and inservice education—hold great promise for helping teachers think and reason collaboratively about their practice. Interest in the methodology has grown steadily with several publications devoting entire editions to using case-based instruction in education. Also, recent chapters in the *Review of Educational Research* and the *Handbook on Teacher Education* highlight the development and use of case-based instruction in education.

How was this program tested?

With his 1986 presidential address to the American Educational Research Association, Lee Shulman brought renewed national attention to the potential of case-based instruction for educating teachers. That same year, Far West Laboratory, now WestEd, began a partnership with Los Angeles Unified School District to develop cases on the experiences of mentor teachers. The mentor teacher position was new, and teachers themselves wrote cases as part of a course over the year. Through their first-person accounts, a published casebook helps others think about the complexity of this role.

The pattern of development in that first book has been repeated and strengthened in later projects on other topics. The Mathematics Case Methods project, for example, is part of an 8-year partnership between the Hayward Unified School District, in Hayward, California, and WestEd. Cases are crafted by practitioners, in collaboration with WestEd staff and other professional colleagues. The writing process is guided by information about case format, peer review and discussion, and sometimes external editing. Discussions are held to field test and fine-tune the cases and also to provide information for a facilitator's guide to help discussion leaders anticipate productive themes or issues in a case. Sometimes formal commentary on a case is included in a casebook.

Throughout its case development process, WestEd collects formative evaluations of case discussion groups and the related professional development activities for case writers and discussion facilitators. Not only do teachers report enjoying case discussions, they claim that case methods help them better understand mathematics, student misconceptions, and the power of collaborating with other teachers.

WestEd's summative studies among teachers who have participated in math case discussions document improvements in content knowledge, beliefs

about teaching, and classroom practices. For example, data gathered in individual interviews with 20 teachers suggest that after participating in case discussions, their behaviors in the classroom and their beliefs about teaching had begun to conform more closely with those recommended in reform documents.

Examination of one of the discussion groups over time indicated that participants came to perceive the locus of professional authority as residing individually within themselves and collectively among members in their group, rather than flowing only from external sources of expertise or power. This same study provided evidence that participating teachers developed a more robust understanding of aspects of domain-specific content discussed during these meetings, as well as developing an increasingly critical stance toward teaching, learning, and curriculum issues that emerge in the course of these discussions. In addition, case discussion participants often report that specific features of the case method are adapted to classroom practices.

What communities and states are using *Teaching Cases*?

WestEd staff have conducted seminars and workshops nationwide and worldwide to help educators understand the power of cases and to begin their own case development and use. Case projects are under way in states such as Arizona, Connecticut, Georgia, and Nevada. Other regional laboratories have developed case projects with assistance from WestEd, for example, work by Appalachia Educational Laboratory in Kentucky on science cases. Networks of teachers, educators, and staff developers meet nationally and regionally to help each other expand and improve their work.

Mathematics Case Methods are being used throughout California in school districts such as Hayward Unified, San Francisco Unified, and Los Angeles Unified. In-depth development of teacher leaders is occurring in the California Math Matters Project and the Phoenix (Arizona) Systemic Initiative. As the Mathematics project has been more finely developed, it, too, has spread to other states and countries including Australia, Malaysia, and Saipan.

What's involved in using this program in my school and community?

WestEd's casework focuses on training educators and staff developers to write and edit cases and to conduct systematic case discussions. WestEd sometimes works extensively with one group of educators to develop cases, around a particular topic, which are then published in a WestEd casebook. As time allows, staff work also, through a contract, with districts or schools to help them develop and use their own cases.

In the Mathematics Case Methods project, specifically, those participating typically engage in six to seven 2-hour case discussions over the course of a school year. Some are then ready to attend a 2-day seminar at which they learn to facilitate case discussions or write new cases. But to achieve the best results—whatever their involvement with case methods—participants need sustained exposure, graduated experiences, and feedback. This means that the case method approach is a long-term commitment.

Costs associated with implementing this program vary, depending on the components of the program being used.

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Onward to Excellence

A Ten-Step School Improvement Process Designed To Improve Student Performance

Developed and tested by the Northwest Regional Educational Laboratory (NWREL)

What is the idea behind *Onward to Excellence*?

Onward to Excellence is both a school improvement process and a training and technical assistance program:

- The 10-step, research-based, school improvement process engages an entire school staff in using effective schooling research to improve student performance.
- The training and technical assistance program develops the capacity of a school leadership team to involve all staff members—and in some instances community representatives—in implementing the process. This training program promotes improvement of student performance in at least one area as the school learns to use the process.

The process begins by (1) introducing the effort throughout the school and the community, and continues with (2) staff learning about the research, (3) profiling student performance, (4) setting one or two improvement goals, (5) checking current practice related to the goal or goals, (6) developing a prescription for improvement, and (7) developing action plans for implementation. The final steps in the initial cycle of the process include (8) implementing action plans, (9) monitoring progress, and (10) renewing the effort. The leadership team of 10 or fewer individuals includes teachers, specialists, and a principal in all instances. It includes students, community representatives, and classified staff in some instances.

Two conditions seem to be necessary to maximize potential for successful use of the *Onward to Excellence* school improvement process. The first is that the district and the schools have gone through a thoughtful process of deciding to use *Onward to Excellence*. Full consideration should be given to time and resource implications of the process in light of other improvement activities being undertaken in the school and district. Second, districts and schools should consciously decide to commit some of their own resources and leadership to the effort. Obtaining outside funding for the entire process seems to cause schools and districts to take the process less seriously than when they commit their own resources.

What does research say about how this idea can help teaching and learning?

Two research bases underlie *Onward to Excellence*: effective schooling, and adult learning and professional staff development.

1. The effective schooling research

The effective schooling research is summarized in a publication entitled *Effective Schooling Practices: A Research Synthesis/1995 Update*. Drawing upon several research bases, the synthesis identifies practices at the classroom, school, and district levels that have been shown to have a positive impact on student results—academic achievement, attitudes, and social behavior. Within each level, findings are organized by topic; for example, the school-level section summarizes research on leadership, setting goals and objectives, curriculum integration, uses of computer technology, workplace preparation, site-based management, grouping, time use, discipline, equity, staff development, assessment, parent involvement, alcohol and drug use prevention, and others. *Onward to Excellence* schools and many others use the information in the synthesis to develop school improvement plans.

Some two dozen additional research syntheses are available that explore these and other topics in greater detail, and 40 other feature pieces describe effective programs in schools in the NWREL region and beyond. Together, these materials compose the "School Improvement Research" series, which is available on a subscription basis from NWREL.

2. Adult learning and professional development

A synthesis of adult learning theory and professional staff development is also available from NWREL in a publication entitled *A Review of Adult Learning Theory and Development Research*. Based on an extensive review of research on the ways adults learn and the effects of different approaches to professional development, effective development programs were found to have the following characteristics, grouped into three categories:

- **Content clarity, relevance, and usefulness.** Effective programs identify goals and objectives clearly, and their content builds on participants' prior experiences. Activities prepare them to apply what they are learning within their own work environments. Program content is research-based and includes both knowledge acquisition and skill development. Participant evaluation and

accountability are integrated into the program.

- **Multifaceted delivery model.** Effective programs are delivered in several incidents over an extended period of time, and activities include presentation of new material, demonstration, practice, feedback, and follow-up. Programs offer a variety of instructional modes including group learning; lecture; discussion; and video or role play, or both. Participants learn collegially, in cooperative situations, with and from each other.
- **Follow-up.** Systematic, long-term, follow-up is a key feature of effective programs for purposes of supporting participants in transferring newly gained knowledge and skills to their work environments. Program providers observe and provide feedback to participants as they work to implement changes.

How was this program tested?

Onward to Excellence, as a process and training program, has been in use for over 10 years. Pilot testing was carried out in Alaska, Oregon, and Washington between 1981 and 1984. The training program has been available on a "for-fee" basis since that time. Leadership teams from well over 750 schools in 12 states have been trained in this school improvement process since the pilot tests. Schools having a wide variety of characteristics—students of racial or ethnic mixes, students on free and reduced-price lunch, schools in rural, suburban, small city, and urban locations, for example—have been trained in the process.

What communities and states are using this program?

Many states have benefited from implementation of *Onward to Excellence*, including Alaska, Arkansas, Colorado, Florida, Hawaii, Idaho, Illinois, Kansas, Mississippi, Montana, Oklahoma, Oregon, and Washington. In addition, Guam, American Samoa, Panama, British Columbia, and the Commonwealth of the Northern Mariana Islands have also used it. The benefits most often cited by schools after completing the training program are increased focus on agreed-upon important goals, improved collegiality and support among staff members, greater involvement of staff in making decisions that affect the whole school, and improvement in student performance.

What's involved in using this program in my school and community?

Costs for use of *Onward to Excellence* fall into two categories: (1) trainer and resource costs and (2) staff costs. Trainer costs outside the NWREL region are slightly more than inside the region.

Staff costs include release time for leadership team members to participate in training and additional time to complete tasks related to the school improvement effort. Each team member will need approximately 8 days of release time for each of the 2 training years. Following the training program, leadership team members should be able to do their work in the equivalent of 3 release days per year.

A need also exists to involve the full faculty in improvement activities. An estimate of the amount of time with the full faculty is four blocks of 2 or 3 hours each per year. Committee work may be organized and handled in the way that other committee work is already managed in the school.

The decision to use *Onward to Excellence* is usually made in several steps. Initially, schools or districts will receive informational materials from NWREL after inquiring about the program. If they decide they are interested in implementing the program in their district, they can request an awareness session that is a half-day to a full-day workshop that highlights the process.

Following the workshop, or in some instances before, there is a request for names of schools that have used the process and the training program; references are provided. The next request is usually for an estimate of costs and the names of potential trainers—schools and districts generally have a high level of concern about who their trainers will be.

With this final information, the district makes a yes or no decision to proceed. Throughout the decision process, many individuals at many levels are involved in learning about the process and the training and technical assistance program. Principals are then asked to discuss the process with their staff and, if enough interest is evident, agree to participate.

Costs associated with implementing this program vary, depending on the components of the program being used.

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Successful Schools Process

A Rural School Improvement Process for Reaching Consensus and Developing Plans for Student Outcomes

Developed and tested by the Northwest Regional Educational Laboratory (NWREL)

What is the idea behind *Successful Schools Process*?

This is a school improvement process designed to meet the needs of small, rural school districts. It is based on the premise that a successful rural school recognizes its own strengths and needs. The process is designed to bring all members of the educational community together to reach consensus on desirable student outcomes and to cooperatively develop a plan to achieve those outcomes. Community and school board members, school administration, staff, and parents all have essential roles in the process.

This program provides consideration of all the purposes of schooling—social, emotional, intellectual, and economic values, as well as academic achievement—in the improvement process. The purposes of schooling define the skills, attitude, and knowledge that the educational community wants for its students. Because each community is unique, the needs of the school are defined in terms of community values and philosophies. The process begins with the examination of the school's mission and culminates with a board-adopted action plan for development and celebration of specific student outcomes.

The *Successful Schools Process* consists of an orientation session followed by four on-site workshops. Total time spent in workshops is approximately 12 hours, and total "homework" time between workshops is also about 12 hours. Workshops are scheduled about 3 to 6 weeks apart allowing for a school district to complete the training within one semester.

What does research say about how this idea can help teaching and learning?

Drawing on school effects research, the need to collaborate for the purpose of school improvement has been well documented. Research on school change has found that successful school improvement efforts are linked to shared control through collaborative efforts of education stakeholders, technical assistance, and

instructional practices that adhere to high expectations for all students. When rural schools are provided with opportunities aimed at improvement, goals are accomplished quickly, openly, and efficiently. Because bureaucratic obstacles are rare in the informal organization of rural schools, effective consensus decision making is augmented.

Communication and cooperation among school staff, administrators, school board members, and community members is essential to systemic, well-managed change that engages all responsible parties in the improvement process. In successful rural school improvement efforts, there are high levels of staff and community involvement in decision making, resulting in strong goal consensus regarding student outcomes.

How was program tested?

The *Successful Schools Process* was pilot tested in 1988–89 at 10 sites. Since then, a total of 36 school districts have participated in the process with NWREL field staff, and 4 districts with members of the *Successful Schools* Cadre. Only those districts trained by NWREL field staff contributed to evaluation data compiled in the successive years of 1991 through 1994. Evaluation data came from four sources:

1. **Individual participant feedback** collected during the last *Successful Schools* workshop.
2. **Follow-up evaluation visits** conducted at each site in the fall succeeding the last workshop for each respective site. The purpose of the visits was to interview participants about implementing action plans, monitoring activities, and continuing steps of the process.
3. **Pre- and post-data from the *Successful Schools*** inventory used to determine the effect of districts' participation in the process. The inventory is a measure of perceptions held by the educational community on school district effectiveness. Pre-data inventory results reflected respondents perceptions of district needs and strengths at the time of the follow-up evaluation visit, usually about 1 year later. Respondents rate their district on each of 57 characteristic attributes of high-performing schools using two dimensions—"current status" of implementation of the attribute and "level of importance" each attribute has in the district.
4. **Mailed surveys** used to develop professional activity reports completed each year by district superintendents in the year after completion of the workshops. Also, in 1993, surveys

relative to ongoing effects of their school improvement efforts were mailed to all sites that had completed the process. At that time, a total of 29 districts had participated in the process. Twenty-six districts responded.

Professional activity reports included superintendents' assessment of district readiness for goal setting, prospects for implementation and attainment of district goals, and benefits of participating in the process.

Surveys on the impact of school improvement efforts asked districts to rate the degree to which items in each of four categories were utilized as a result of being involved in the *Successful Schools Process*: outcomes for school improvement; equity issues for rural, poor, minority, and at-risk students; use of student outcome information for decision making; and strengthening ties between school and community.

No additional follow-up studies are scheduled at this time.

The *Successful Schools Process* was evaluated in 35 single-campus districts and one multicampus district. The focus of the process is "districtwide" rather than "schoolwide." The process is not favorably suited for multicampus districts or districts with student enrollment in excess of 300.

What communities and states are using this program?

A total of 40 school districts in Alaska, Idaho, Montana, Oregon, and Washington were trained in the *Successful Schools Process* between 1988 and 1994.

What's involved in using this program in my school and community?

Training in the process is available for school districts on a contractual basis with the NWREL. Any small, rural school district can contract to receive training if they meet the following criteria:

The school district must be rural and

- the school board must be committed to participate in the process;
- school size should be under 300 total district enrollment;
- the district must be a single campus facility; and
- the district should show distress in the following ways:

- achievement data show the district to rank in lowest cartel when compared with statewide data;
- student-related expenditures rank low when compared with the state;
- family poverty is high; and
- distance from a metropolitan center or higher education institution exceeds 30 miles.

It is critical that the school board and community members (including parents) are active participants in this program in order for it to succeed. Shared commitment by the school and community to improve student outcomes is greater when there is consensus decision making done through broad-based representation.

Each of the four required workshops takes about 3 hours. Completion of "homework" required by development efforts will vary, but an estimated additional 12 hours of time is common. Districts that provide release time for staff for meetings and development work between sessions tend to experience greater success in achieving their goals.

The program also requires a facilitator who can serve as an outside change agent sensitive to the special needs of a small, isolated, rural community. Fourteen field-based facilitators from the region have been trained in the process. Plans are in place to train additional field facilitators during upcoming years.

Districts exercise flexibility in scheduling the *Successful Schools Process* orientation and workshop sessions. Some opt to complete all sessions within one semester, while others prefer scheduling the sessions throughout the school year. About half of participating districts schedule the orientation in late spring and begin the workshop series with the next school year. Based on school readiness assessment results 1991, however, the orientation session is not an option—it is a prerequisite for participating districts. A small number of districts have added a fifth workshop that is tailored to strategies identified in the action plan.

Local considerations are integral to assisting a school district with its improvement efforts. Although several districts may select the same general improvement focus area, their specific needs will be defined in terms of community values and philosophies. The approaches taken with their action plans will be widely varied, reflecting the unique nature of their communities. These aspects were evident with 1990–91 participating districts.

Costs associated with implementing this program vary, depending on the components of the program being used.

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Family Connections

Appalachia Educational Laboratory (AEL)

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Program for Infant and Toddler Caregivers

WestEd and the California Department of Education

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For information on participating in the California training sessions or to arrange special training institutes, call Terry De Martini, Director, Training and Technical Assistance, Center for Child and Family Studies, WestEd, at (415) 331–5277.

Classroom Assessment Video Training Workshops

Northwest Regional Educational Laboratory (NWREL)

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Comprehensive School Mathematics Program (CSMP)

McREL Mid-continent Regional Educational Laboratory (McREL)

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Literacy Plus

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SEDL Follow Through Program

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Strategic Teaching and Reading Project (STRP)

NCREL North Central Regional Educational Laboratory (NCREL)

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Success for All and Exito Para Todos

WestEd CRESPAR and WestEd

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Vocational Mentoring

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Dimensions of Learning

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Improving Multigrade Classroom Instruction in Small, Rural Schools

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Peer-Assisted Leadership (PAL)

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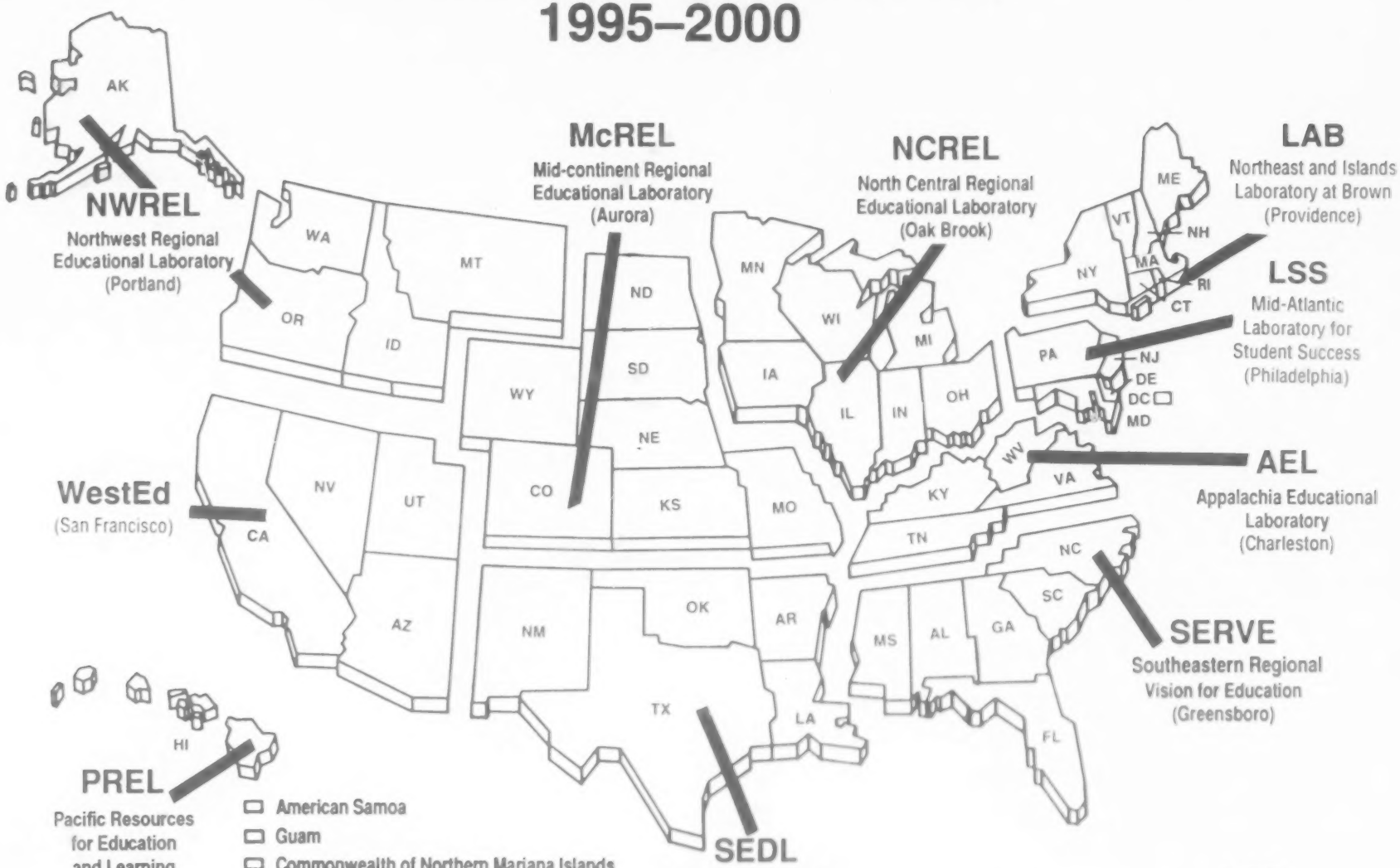
Regional Educational Laboratory Map 1995–2000



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On December 16, 1996, Secretary of Education Richard W. Riley and Sharon P. Robinson, the Assistant Secretary for Educational Research and Improvement, released a research agenda for obtaining new knowledge about how to improve teaching and learning in the nation's schools. Secretary Riley described the report as "a foundation for education in the 21st century."

The report, *Building Knowledge for a Nation of Learners*, builds on the prior research achievements of the agency and sets out clear priorities for educational research geared to meet the nation's future needs. The seven national priorities for research in education are:

- improving learning and development in early childhood so that all children can enter kindergarten prepared to learn and succeed in elementary and secondary schools;
- improving curriculum, instruction, assessment, and student learning at all levels of education to promote high academic achievement, problem-solving abilities, creativity, and the motivation for further learning;
- ensuring effective teaching by expanding the supply of potential teachers, improving teacher preparation, and promoting career-long professional development at all levels of education;
- strengthening schools, particularly middle and high schools, as institutions capable of engaging young people as active and responsible learners;
- supporting schools to effectively prepare diverse populations to meet high standards for knowledge, skills, and productivity, and to participate fully in American economic, cultural, social, and civic life;
- promoting learning in informal and formal settings, and building connections that cause out-of-school experiences to contribute to in-school achievement; and
- understanding the changing requirements for adult competence in civic, work, and social contexts and how these requirements affect learning and the futures of individuals in the nation.

As we press forward to advance these priorities, we recognize the high-quality research contributions of the Regional Laboratories in efforts such as this collection of proven practices, and we encourage new collaborations with schools and the Laboratories in future research and development work.

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